58145Y/33 E32 M25 ARIT- 25.12.75
ARITA KENKYUSHO KK *J5 2078-608
25.12.75-JA-155229 (02.07.77) C22b-05/02 C22b-34/10

Treating titanium group metals to obtain metals or nitrides - by reducing with hydrogen and ammonia

Chlorides of Ti gp. metals e.g. Ti, Zr, Hf, etc. and similar metals such as Th are reduced with reductant consisting mainly of H_2 and NH_3. When H_2 and NH_3 are reacted with the chlorides at 200 to 800°C metal is formed according to the equation formula $MCl_4+2H_2+4NH_3 \rightarrow M+4NH_4Cl$.

Substitution of a part of the H_2 and NH_3 with base metals such as Na, Mn and Al makes possible redn. at < 200°C. When H_2 is used in an increased amount and excess H_2 is cycled in the reaction system, side reactions are controlled and metals are obtd. in powder form. The reaction under press. brings about spongy metals.

When the amt. of hydrogen is reduced and ammonia is used in an increased amt. nitride-contg. metals are obtained at a higher reactn. temp.

E(34-E, 35-K, 35-L) M(22-H1, 25-C2). 130

J52078608